

### Office Action Summary

**Application No.**

10/797,152

**Applicant(s)**

BANERJEE ET AL.

**Examiner**

RANDY SCOTT

**Art Unit**

2453

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 13-18, 30-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 19-29 and 35-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date 3/11/04
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date 2/5/09
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

DETAILED ACTION

1. This Office Action is responsive to the application filed on 3/11/2004

***Election/Restrictions***

2. Restriction to one of the following invention is required under 35 U.S.C. 121:

- I. Claims 1-12, 19-29, & 35-37 are drawn to a method for searching for a service path and node to provide a requested service and by searching for a node capable of providing the request, classified in class 709, subclass 229.
- II. Claims 13-18 are drawn to a method for requesting a service and generating a request based on QOS requirements, classified in class 709, subclass 203.
- III. Claims 30-34 are drawn to a system with a processor for determining the distance of the nearest node containing the requested service, classified in class 710, subclass 39.

3. Inventions I, II, and III are related as subcombination disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. The following are case instants:

Invention II has separate utility from group I because the main limitation is drawn to requesting a service based on QOS, instead of receiving a request and searching for the service path to provide the request.

Invention III has a separate utility from group I because the main positive limitation claimed is determining the nearest distance of the node containing the requested service. Each group is somewhat related to the language in group I, but 35 U.S.C. 121 requires that each independent claim be written in language that would cause one of ordinary skill in the art to view each independent claims as the exact same invention.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper. During a telephone conversation with Ashok K. Mannava, attorney docket. no. 2003112B2-1, on February 5<sup>th</sup>, 2009 an election was made without traverse to prosecute the invention of group I, claims 1-12, 19-29, & 35-37. Affirmation of this election was made by the applicant filing a preliminary amendment on 2/5/09. Claims 13-18 and 30-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Claims 13-18 and 30-34 are orally withdrawn by election of restriction on the phone on 2/3/2009.
5. Claims 13-18 and 30-34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group of invention, there being no allowable generic or linking claim. Election was made **without** traverse.

**Claim Rejections – 35 USC § 112**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 26 recites the limitation the multicast tree in line 2. There is insufficient antecedent basis for this limitation in the claim.

**Claim Rejections – 35 USC § 102**

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be granted a patent unless-

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 6, 12, 24, and 35 are rejected under 35 USC 102(b) as being anticipated by Hahn et al (US 2002/0152293).

Regarding claims 1, 24, and 35, Hahn et al disclose:

Receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the

information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations claimed in this application), and storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location).

Regarding claim 6, Hahn et al disclose:

Wherein searching the stored information comprises: searching the stored information to determine whether a service path exists that is operable to provide the requested service or is operable to provide at least one of the requested services if a plurality of services are requested (see sec [0011], lines 3-6, which teaches performing a query to determine a route that has a server instance capable of handling the request and sec [0017], lines 2-5, which teaches determining if a particular route has failed).

Regarding claim 12, Hahn et al disclose:

Wherein searching stored information comprises searching stored information for at least one of a service path and a service node operable to provide the requested service via a multicast in an application layer multicasting network (see sec [0018], lines 3-8, which teaches sing the multicast protocol to send messages throughout each DSD agent to verify that each agent may be able to receive data via each route in the network, the procedure also checks for route failure, also see sec [0067], lines 1-3, which discloses that each DSD agent table contains server routes for each requested service).

**Claim Rejections – 35 USC 103**

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

- (a) A patent may not be obtained through the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Aggarwal (US 2004/0221154).

With respect to claim 2, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 2, except for wherein the stored information comprises a global information table, the global information table including at the least location information and information associated with services provided for nodes in a distributed hash table overlay network.

The general concept of wherein the stored information comprises a global information table, the global information table including at the least location information (see sec [0029], lines 1-3, “global hash table”) and information associated with services provided for nodes in a distributed hash table overlay network (see sec [0034], lines 2-6, which discloses that the table will determine appropriate paths for transferring through the overlay network) is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the stored information comprises a global information table, the global information table including at the least location information and information associated with services provided for nodes in a distributed hash table overlay network, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Aggarwal (US 2004/0221154).

With respect to claim 3, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 3, except for wherein the stored information comprises a global information table, the global information table including at the least location information and information associated with services provided for nodes in a distributed hash table overlay network and wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree.

The general concept of wherein the stored information comprises a global information table, the global information table including at the least location information (see sec [0029], lines 1-3, “global hash table”) and information associated with services provided for nodes in a distributed hash table overlay network (see sec [0034], lines 2-6, which discloses that the table will determine appropriate paths for transferring through the overlay network), and wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree (see sec [0036], lines 5-8) is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the stored information comprises a global information table, the global information table including at the least location information and information associated with services provided for nodes in a distributed hash table overlay network, and wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

13. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Aggarwal (US 2004/0221154).

With respect to claim 4, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 4, except for wherein the stored information comprises a global information table, the global information table including at the least location information and information associated with services provided for nodes in a distributed hash table overlay network, wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree, and wherein the global information table includes information for nodes physically close in the physical network.

The general concept of wherein the stored information comprises a global information table, the global information table including at the least location information (see sec [0029], lines 1-3, "global hash table") and information associated with services provided for nodes in a distributed hash table overlay network (see sec [0034], lines 2-6, which discloses that the table



will determine appropriate paths for transferring through the overlay network), wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree (see sec [0036], lines 5-8), and wherein the global information table includes information for nodes physically close in the physical network (see sec [0013], lines 18-23, “physical network”) is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the stored information comprises a global information table, the global information table including at the least location information and information associated with services provided for nodes in a distributed hash table overlay network, and wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Aggarwal (US 2004/0221154).

With respect to claim 5, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 5, except for wherein searching stored information comprises: searching the stored information to determine whether a service path or a service node exists that is operable to provide the requested service and satisfy a QoS characteristic identified in the request, the QoS characteristic being associated with delivering the requested service.

The general concept of wherein searching stored information comprises: searching the stored information to determine whether a service path or a service node exists that is operable to provide the requested service and satisfy a QoS characteristic identified in the request, the QoS characteristic being associated with delivering the requested service (see sec [0038], lines 2-6, “Qos”) is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein searching stored information comprises: searching the stored information to determine whether a service path or a service node exists that is operable to provide the requested service and satisfy a QoS characteristic identified in the request, the QoS characteristic being associated with delivering the requested service, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

15. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Busche (US 5,805,593).

With respect to claim 7, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 7, except for wherein searching the stored information to determine whether a service path exists comprises: searching the stored information to determine whether a service path exists that is operable to provide the requested service and is within a predetermined distance to a node requesting the service.

The general concept of wherein searching the stored information to determine whether a service path exists comprises: searching the stored information to determine whether a service

path exists that is operable to provide the requested service and is within a predetermined distance to a node requesting the service (see col. 6, lines 1-5, which teaches predetermined shortest path determination for routers connected services to destination nodes) is well known in the art as illustrated by Busche.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein searching the stored information to determine whether a service path exists comprises: searching the stored information to determine whether a service path exists that is operable to provide the requested service and is within a predetermined distance to a node requesting the service, as illustrated by Busche, in order to effectively route services to nodes in a network.

16. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Busche (US 5,805,593).

With respect to claim 8, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 8, except for wherein searching the stored information comprises: searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to a service path not existing that is operable to provide the requested service.

The general concept of wherein searching the stored information comprises: searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to a service path not existing that is operable to provide the requested service

(see col. 2, lines 40-50, which teaches that a destination node is chosen from a group of local nodes when no shortest path is found at the origination node) is well known in the art as illustrated by Busche.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein searching the stored information comprises: searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to a service path not existing that is operable to provide the requested service, as illustrated by Busche, in order to effectively route services to nodes in a network.

17. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Busche (US 5,805,593).

With respect to claim 9, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 9, except for wherein for applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service.

The general concept of applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service (see col. 4, lines 10-15, "shortest path algorithm) is well known in the art as illustrated by Busche.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of applying a clustering algorithm to the plurality of service nodes to identify

a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service, as illustrated by Busche, in order to effectively route services to nodes in a network.

18. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Kumar (US 2005/0122904).

With respect to claim 10, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 10, except for wherein the request comprises information identifying a plurality of requested services and an order for delivering the requested services.

The general concept of wherein the request comprises information identifying a plurality of requested services and an order for delivering the requested services (see sec [0027], lines 2-6, which teaches specifying one or more services being requested) is well known in the art as illustrated by Kumar.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the request comprises information identifying a plurality of requested services and an order for delivering the requested services, as illustrated by Kumar, in order to efficiently regulate directory control of nodes containing services.

19. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Kumar (US 2005/0122904).

With respect to claim 11, Hahn et al teaches storing the location information associated with services (see sec [0048], as discussed above).

Hahn et al teaches all the limitations of claim 11, except for wherein the request comprises information identifying at least one requested service and at least one QoS characteristic associated with delivering the requested service.

The general concept of wherein the request comprises information identifying at least one requested service and at least one QOS characteristic associated with delivering the requested service (see sec [0022], lines 2-8, which teaches QOS based on service characteristics) is well known in the art as illustrated by Kumar.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the request comprises information identifying at least one requested service and at least one QOS characteristic associated with delivering the requested service, as illustrated by Kumar, in order to efficiently regulate directory control of nodes containing services.

20. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Oom Temudo de Castro et al (US 2005/0030904).

With respect to claim 19, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location

information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations claimed in this application), and storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location).

Hahn et al teaches all the limitations of claim 19, except for wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node.

The general concept of wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node (see sec [0010], which teaches measuring the distance between the subject node and reference nodes to provide the information) is well known in the art as illustrated by Oom Temudo de Castro et al.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node, as illustrated by Oom Temudo de Castro et al, in order to efficiently implement an infrastructure to capture the coordinates of a node that contains a requested resource.

21. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Oom Temudo de Castro et al (US 2005/0030904).

With respect to claim 20, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations claimed in this application), and storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location).

Hahn et al teaches all the limitations of claim 20, except for wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes.

The general concept of wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node (see sec [0010], which teaches measuring the distance between the subject node and reference nodes to provide the information) and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes (see sec [0035], lines 1-3, which discloses measuring the distance between



the subject node and many reference nodes and sec [0033], lines 7-10, “predefined landmark nodes”) is well known in the art as illustrated by Oom Temudo de Castro et al.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes, as illustrated by Oom Temudo de Castro et al, in order to efficiently implement an infrastructure to capture the coordinates of a node that contains a requested resource.

22. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Oom Temudo de Castro et al (US 2005/0030904), further in view of Matsubara (US 2004/0008687).

With respect to claim 21, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations

claimed in this application), and storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location).

Hahn et al teaches all the limitations of claim 21, except for wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes.

The general concept of wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node (see sec [0010], which teaches measuring the distance between the subject node and reference nodes to provide the information) and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes (see sec [0035], lines 1-3, which discloses measuring the distance between the subject node and many reference nodes and sec [0033], lines 7-10, “predefined landmark nodes”) is well known in the art as illustrated by Oom Temudo de Castro et al.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes, as illustrated by Oom Temudo de Castro et al, in order to efficiently implement an infrastructure to capture the coordinates of a node that contains a requested resource.

Hahn et al, in combination with Oom Temudo de Castro et al, teach all the limitations of claim 21, except for storing a QoS characteristic associated with at least one of the plurality of nodes in the table.

The general concept of storing a QoS characteristic associated with at least one of the plurality of nodes in the table (see sec [0017] and [0018], lines 1-3, which discloses qos implementation of path data in a path table) is well known in the art as illustrated by Matsubara.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of storing a QoS characteristic associated with at least one of the plurality of nodes in the table, as illustrated by Matsubara, in order to effectively access resources by managing path data.

23. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Oom Temudo de Castro et al (US 2005/0030904), further in view of Matsubara (US 2004/0008687).

With respect to claim 22, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations

claimed in this application), and storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location).

Hahn et al teaches all the limitations of claim 22, except for wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes.

The general concept of wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node (see sec [0010], which teaches measuring the distance between the subject node and reference nodes to provide the information) and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes (see sec [0035], lines 1-3, which discloses measuring the distance between the subject node and many reference nodes and sec [0033], lines 7-10, “predefined landmark nodes”) is well known in the art as illustrated by Oom Temudo de Castro et al.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes, as illustrated by Oom Temudo de Castro et al, in order to efficiently implement an infrastructure to capture the coordinates of a node that contains a requested resource.

Hahn et al, in combination with Oom Temudo de Castro et al, teach all the limitations of claim 22, except for storing at least one of a node identifier and a service path identifier for each of the plurality of nodes in the table.

The general concept of storing at least one of a node identifier and a service path identifier for each of the plurality of nodes in the table (see sec [0036], lines 5-8 and sec [0040], lines 6-9, which teach destination IDs and identifying interfaces of the node that connect with network links) is well known in the art as illustrated by Matsubara.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of storing at least one of a node identifier and a service path identifier for each of the plurality of nodes in the table, as illustrated by Matsubara, in order to effectively access resources by managing path data.

24. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Oom Temudo de Castro et al (US 2005/0030904).

With respect to claim 23, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations

claimed in this application), storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location), and wherein receiving location information for a plurality of nodes comprises receiving location information for a plurality of nodes, the nodes being located physically close in the network (see sec [0013], "host machine location").

Hahn et al teaches all the limitations of claim 23, except for wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes.

The general concept of wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node (see sec [0010], which teaches measuring the distance between the subject node and reference nodes to provide the information) and wherein the at least one local landmark node is proximally located to a respective node of the plurality of nodes (see sec [0035], lines 1-3, which discloses measuring the distance between the subject node and many reference nodes and sec [0033], lines 7-10, "predefined landmark nodes") is well known in the art as illustrated by Oom Temudo de Castro et al.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept wherein the location information for the plurality of nodes comprises distances measured from each of the plurality of nodes to a plurality of global landmark nodes and to at least one local landmark node and wherein the at least one local landmark node is

proximally located to a respective node of the plurality of nodes, as illustrated by Oom Temudo de Castro et al, in order to efficiently implement an infrastructure to capture the coordinates of a node that contains a requested resource.

25. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Aggarwal (US 2004/0221154).

With respect to claim 25, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations claimed in this application), storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location), and wherein receiving location information for a plurality of nodes comprises receiving location information for a plurality of nodes, the nodes being located physically close in the network (see sec [0013], "host machine location").

Hahn et al teaches all the limitations of claim 25, except for wherein the stored information comprises a global information table, the global information table including at least

location information and information associated with services provided for nodes in a distributed hash table overlay network.

The general concept of wherein the stored information comprises a global information table, the global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network (see sec [0029], lines 1-3, "global hash table" and sec [0034], lines 2-6, which discloses that the table will determine appropriate paths for transferring through the overlay network) is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the stored information comprises a global information table, the global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

26. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Aggarwal (US 2004/0221154).

With respect to claim 26, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access



to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations claimed in this application), storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location), and wherein receiving location information for a plurality of nodes comprises receiving location information for a plurality of nodes, the nodes being located physically close in the network (see sec [0013], "host machine location").

Hahn et al teaches all the limitations of claim 26, except for wherein the stored information comprises a global information table, the global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network and wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree.

The general concept of wherein the stored information comprises a global information table, the global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network (see sec [0029], lines 1-3, "global hash table" and sec [0034], lines 2-6, which discloses that the table will determine appropriate paths for transferring through the overlay network) and wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree (see sec [0036], lines 6-9, which teaches the multicast tree's role in the overlay network) is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the stored information comprises a global information table, the

global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network and wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

27. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Aggarwal (US 2004/0221154).

With respect to claim 27, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request); searching stored information at a node receiving the request for at least one of a service path and a service node operable to provide the requested service (see sec [0067], lines 1-4, which teaches searching for a desired service route for the service), wherein the information is stored in the node by receiving location information for the plurality of nodes (see sec [0048], lines 2-10, which teaches providing access to storage locations upon storing information at a particular address in the storage table, also see sec [0007], lines 8-11, which teaches LDAP, which is a function that addresses the limitations claimed in this application), storing the location information associated with services (see sec [0048], lines 10-16, which teaches storing information at a particular storage location), and wherein receiving location information for a plurality of nodes comprises receiving location information for a plurality of nodes, the nodes being located physically close in the network (see sec [0013], "host machine location").

Hahn et al teaches all the limitations of claim 27, except for wherein the stored information comprises a global information table, the global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network, wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree, and wherein the global information table includes information for nodes physically close in the physical network.

The general concept of wherein the stored information comprises a global information table, the global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network (see sec [0029], lines 1-3, “global hash table” and sec [0034], lines 2-6, which discloses that the table will determine appropriate paths for transferring through the overlay network), wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree (see sec [0036], lines 6-9, which teaches the multicast tree’s role in the overlay network), and wherein the global information table includes information for nodes physically close in the physical network (see sec [0029], lines 1-6) is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of wherein the stored information comprises a global information table, the global information table including at least location information and information associated with services provided for nodes in a distributed hash table overlay network, wherein the distributed hash table overlay network is a logical representation of a physical network including the multicast tree, and wherein the global information table includes information for nodes

physically close in the physical network, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

28. Claims 28 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Busche (US 5,805,593), further in view of Aggarwal (US 2004/0221154).

With respect to claims 28 and 35, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request).

Hahn et al teaches all the limitations of claims 28 and 35, except for means for searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to one of a service path not existing that is operable to provide the requested service and a service path not existing that is operable to provide the requested service and provide at least one predetermined QoS characteristic.

The general concept of means for searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to one of a service path not existing that is operable to provide the requested service (see col. 2, lines 40-50, which teaches that a destination node is chosen from a group of local nodes when no shortest path is found at the origination node) is well known in the art as illustrated by Busche.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of means for searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to one of a service path not

existing that is operable to provide the requested service, as illustrated by Busche, in order to effectively route services to nodes in a network.

Hahn et al, in combination with Busche, teach all the limitations of claims 28 and 35, except for a service path not existing that is operable to provide the requested service and provide at least one predetermined QoS characteristic.

The general concept of a service path not existing that is operable to provide the requested service and provide at least one predetermined QoS characteristic (see sec [0038], lines 2-6, "QOS based on predefined routes") is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of a service path not existing that is operable to provide the requested service and provide at least one predetermined QoS characteristic, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

29. Claims 29 and 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al (US 2002/0152293), in view of Busche (US 5,805,593), further in view of Aggarwal (US 2004/0221154).

With respect to claims 29 and 36, Hahn et al teaches receiving a request for at least one service (see sec [0010], lines 1-3, which teaches receiving a client request).

Hahn et al teaches all the limitations of claims 29 and 36, except for means for searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to one of a service path not existing that is operable to provide the requested service, a service path not existing that is operable to provide the requested service and provide

at least one predetermined QoS characteristic, and means for applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service.

The general concept of means for searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to one of a service path not existing that is operable to provide the requested service (see col. 2, lines 40-50, which teaches that a destination node is chosen from a group of local nodes when no shortest path is found at the origination node) and applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service (see col. 4, lines 10-15, "shortest path algorithm) are well known in the art as illustrated by Busche.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of means for searching the stored information to identify a plurality of service nodes operable to provide the requested service in response to one of a service path not existing that is operable to provide the requested service and means for applying a clustering algorithm to the plurality of service nodes to identify a set of candidate service nodes from the plurality of service nodes closest to a node requesting the service, as illustrated by Busche, in order to effectively route services to nodes in a network.

Hahn et al, in combination with Busche, teach all the limitations of claims 29 and 36, except for a service path not existing that is operable to provide the requested service and provide at least one predetermined QoS characteristic.

The general concept of a service path not existing that is operable to provide the requested service and provide at least one predetermined QoS characteristic (see sec [0038], lines 2-6, "QOS based on predefined routes") is well known in the art as illustrated by Aggarwal.

It would have been obvious to one of ordinary skill in the art to combine Hahn et al with the general concept of a service path not existing that is operable to provide the requested service and provide at least one predetermined QoS characteristic, as illustrated by Aggarwal, in order to successfully transmit requested data along convenient paths in a network.

### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy A. Scott whose telephone number is (571) 272-3797. The examiner can normally be reached on Monday-Thursday 7:30 am-5:00 pm, second Fridays 7:30 am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. S./

Examiner, Art Unit 2453

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Supervisory Patent Examiner, Art Unit 2457